Articles

Effect of Incentives on the Use of Indicated Services in Managed Care

STEVEN Z. PANTILAT, MD; MARGARET CHESNEY, PhD; BERNARD LO, MD; *San Francisco, California*

In managed care, financial incentives and utilization review create conflicts of interest for physicians. We sought to determine whether these incentives would lead physicians to deny indicated services. We surveyed internists practicing in areas with at least 30% penetration of managed care. Our questionnaire included four scenarios in which a test or referral is indicated according to clearly established practice guidelines. We randomly assigned physicians to receive one of five versions of the questionnaire, which differed only in the type of reimbursement incentive and utilization review that applied to the scenarios. We received responses from 710 (70%) of 1,009 internists. Although physicians underutilized services regardless of incentives in all scenarios, physicians whose questionnaires depicted full capitation said that they would order fewer services than physicians whose questionnaires depicted fee-for-service. In the scenario in which an x-ray of the lumbosacral spine is indicated for a patient with low back pain, 86% of physicians randomized to the full capitation version said that they would order the test compared to 94% in the fee-for-service version. Similarly, physicians randomized to scenarios requiring utilization review said that they would order fewer services than those randomized to scenarios requiring completion of an insurance form. Scenarios depicting managed care incentives caused consistent, modest underutilization compared to fee-for-service scenarioes, although physicians underutilized services under all financial incentives and utilization review. In response, physicians must develop better methods for detecting underutilization and devise programs to increase the provision of indicated services.

(Pantilat SZ, Chesney M, Lo B. Effect of incentives on the use of indicated services in managed care. West J Med 1999; 170:137–142)

Managed care has grown in response to rising health care expenditures under fee-for-service reimbursement. In managed care, financial incentives and utilization review encourage physicians to decrease services. These incentives and utilization review affect physician behavior and have resulted in lower utilization of health care services in managed care.[1–4] One concern is that such incentives and utilization review may not differentiate between services that are unindicated and those that are clearly indicated. Incentives that decrease unindicated services benefit patients and promote quality care. Incentives and utilization review under managed care that lead physicians to withhold clearly indicated services create serious ethical conflicts, however, and result in poorer quality of care. Specifically, these incentives create conflicts of interest for physicians and raise concerns that in response to these incentives, physicians may withhold indicated services.[5,6] Furthermore, such conflicts of interest may erode patient trust in physicians.

Comparisons of the quality of care between managed care and fee-for-service settings find equivocal and inconsistent results.[7] Little rigorous, empirical evidence exists, however, to evaluate whether capitation and utilization review lead physicians to withhold clearly indicated medical services. We sought to determine whether financial incentives and utilization review in managed care lead physicians to withhold services that are indicated according to well-established practice guidelines. We examined scenarios in which services were clearly indicated because these situations raise the strongest ethical concerns regarding harm to patients. To define indicated services, we used evidence-based guidelines published in the medical literature, and we asked about clinical scenarios that fell clearly within these guidelines.

From the Division of General Internal Medicine, Department of Medicine, University of California, San Francisco, California, (Drs Pantilat, Chesney, and Lo), the Program in Medical Ethics, University of California, San Francisco, California (Drs Pantilat and Lo), and the Center for AIDS Prevention Studies, University of California, San Francisco, California (Drs Chesney and Lo).

This paper was presented at the Society of General Internal Medicine National Meeting on May 3, 1996.

Reprint requests to Steven Pantilat, MD, 521 Parnassus Avenue, Suite C-126, UCSF, Box 0903, San Francisco, CA 94143-0903.

TABLE 1.—*Case Scenarios and Indicated Tests or Referrals Included in Each Questionnaire*

Case Scenario	*Indicated Test or Referral According to Guideline*
56-year-old woman with 6 weeks of low back pain not responding to conservative therapy with a normal neurologic examination	X-ray of the lumbosacral spine or orthopedic referral to evaluate for cancer or infection[9]
45-year-old woman with atypical angina for two months, no cardiac risk factors and a normal electrocardiogram	Exercise treadmill test to evaluate for significant coronary artery disease[10–13]
46-year-old man with depression unresponsive to two consecutive, 6-week courses of therapeutic dosage of a tricyclic and a selective serotonin reuptake inhibitor antidepressant	Referral to a psychiatrist or other mental health professional for adjunctive psychotherapy[14]
51-year-old woman with epigastric pain of four years duration refractory to H-2 antagonists and treatment for *Helicobacter pylori* with a normal upper gastrointestinal series	Referral to a gastroenterologist for upper endoscopy to evaluate for ulcer or tumor[15–17]

We conducted a randomized questionnaire study of physicians to answer the following research question: "Do financial incentives and utilization review in managed care lead physicians to state that they would deny patients clearly indicated tests and referrals?"

Methods

Subjects

We surveyed internists in the American College of Physicians (ACP) who *1*) self-identified as general internists in group or solo practice primarily involved in patient care and *2*) practice in metropolitan statistical areas with a population greater than 250,000 and at least 30% penetration of managed care.[8] We excluded physicians who primarily conduct research or practice in a group-model health maintenance organization (HMO) or Veterans Affairs, military, or public institution.

Questionnaire

Our questionnaire included four case scenarios in which a test or referral was indicated according to evidence-based guidelines published in the peer reviewed literature (Table 1).[9–17] For each scenario, physicians were asked to indicate whether they would order the test or referral recommended in the guideline and, if not, to write which test or referral they would order, if any. We pretested the scenarios with academic general internists.

Physicians were randomized to receive one of five versions of the questionnaire (Figure 1): These versions differed only in the type of financial incentive and utilization review that applied to all four scenarios. We randomized three types of financial incentives: *1*) fee-for-service, *2*) capitation with a bonus which stated, "assume that each patient has an insurance plan for which you receive a monthly capitation payment with a potential bonus at the end of the year depending on the cost of your referrals and tests", and *3*) full capitation which stated, "assume that each patient has an insurance plan for which you receive a monthly capitation payment from which you pay for all referrals and tests."

We further randomized according to the utilization review that applied to the scenarios. All fee-for-service versions of the questionnaire required completion of an insurance form as the utilization review. The capitation versions were further randomized to two types of utilization review: *1*) review by a committee of colleagues or *2*) preauthorization by telephone. Thus, physicians

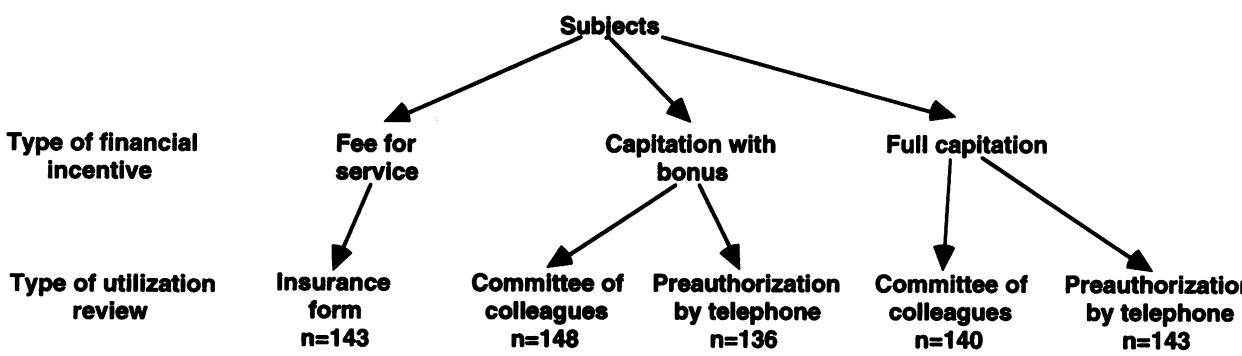

Figure 1.—Randomization to financial incentive and utilization review.

TABLE 2.—*Characteristics of Respondents According to Financial Incentive and Utilization Review Depicted in Questionnaire**

	Fee-for-Service/ Insurance Form (n = 143)	Capitation with Bonus/ Committee of Colleagues (n = 148)	Financial Incentive/ Utilization Review Capitation with Bonus/ Preauthorization by Telephone (n = 136)	Full Capitation/ Committee of Colleagues (n = 140)	Full Capitation/ Preauthorization by Telephone (n = 143)	Total Cohort (n = 710)
Demographics						
Age, y†	46 ± 10	49 ± 11	46 ± 12	48 ± 12	48 ± 11	47 ± 11
Male, %	83	89	85	84	86	85
White, %	80	84	81	79	79	83
Practice characteristics						
Experience with managed care, h/wk†	6 ± 5	7 ± 6	6 ± 5	6 ± 6	6 ± 5	6 ± 5
Patient care, h/wk†	39 ± 14	38 ± 14	38 ± 15	37 ± 14	39 ± 14	38 ± 14
Practice setting, %						
Solo	34	44	40	42	39	40
Group	49	45	48	45	47	47

* There were no statistically signficant differences between groups.
† Values given as the mean ± SD.

were assigned one of five versions of the questionnaire, with each version including the identical case scenario.

Each questionnaire also asked about demographics and practice characteristics.

Our protocol was approved by the University of California, San Francisco Committee on Human Research.

Data Analysis

We recorded the percentage of physicians who stated that they would order the indicated test or referral or who stated that they would order a different test or referral that would achieve the same goal. For the scenario in which the patient with low back pain needs an x-ray of the lumbosacral spine in order to rule out cancer or infection, a referral to an orthopedic surgeon was counted as an appropriate measure because the referral would likely lead to an x-ray of the lumbosacral spine. A computed tomographic (CT) scan or magnetic resonance imaging (MRI) was also counted as an appropriate measure, although referral to physical therapy was not. A treadmill test with thallium or a stress echocardiogram was also scored correct for the patient with atypical angina for whom a treadmill test is indicated. For the scenario in which a referral to a gastroenterologist for upper endoscopy is indicated, we considered any referral to a gastroenterologist or for upper endoscopy correct. For the scenario depicting a man who remains depressed after medical therapy, we considered a referral to any mental health professional correct.

For each scenario, we performed a chi-square test to assess trends in the proportion of physicians who indicated that they would order the test or referral according to the type of financial incentive or utilization review to which they were randomized. We hypothesized that among financial incentives, full capitation would be the most restrictive and fee-for-service the least restrictive. Similarly, we hypothesized that among types of utilization review, preauthorization by telephone would lead physicians to state that they would order the fewest number of indicated tests while completion of an insurance form would lead physicians to indicate that they would order the most. We analyzed the data to examine this predicted trend. We performed all statistical analyses using STATISTICA 4.1 for the Macintosh (StatSoft; Tulsa, OK).

Results

We mailed 1,030 questionnaires and received responses from 710 (70%) of 1,009 eligible subjects. We excluded 21 subjects who moved without leaving a forwarding address, died, or were no longer in practice. Respondents were predominantly white males with busy practices (Table 2). Respondents had experience with managed care, fee-for-service reimbursement (Table 3), capitation, utilization review, preauthorization by telephone, HMO review, and review by a committee of colleagues. Groups of physicians randomized to receive different versions of the questionnaire did not differ significantly in characteristics.

The percentage of physicians stating that they would order an indicated test or referral varied from scenario to scenario (Table 4). The more restrictive the financial incentive, the less likely physicians were to state that they would order the indicated test or referral. In the case of the patient with low back pain, 86% of physicians randomized to full capitation scenarios said that they would order the test, compared to 94% of physicians randomized to fee-for-service scenarios. Among physicians randomized to the full capitation scenario, 51% said that they would order a referral to a gastroenterologist for the patient with dyspepsia, compared to 61% of physicians randomized to fee-for-service scenarios. We found similar, but not statistically significant,

TABLE 3.—*Percent of Physicians who Experience Each Method of Reimbursement and Type of Utilization Review in Their Practice*

	% of Physicians Who Experience Each Type (n = 710)
Reimbursement	
Fee-for-service	90
Discounted fee-for-service	68
Self-pay	68
Any capitation	44
Capitation with bonus	30
Full capitation	27
Other	13
Utilization review	
Preauthorization by telephone	83
Review of tests and referrals by HMO	54
HMO published profile of cost per patient per month	46
Review by a committee of colleagues	31

trends toward fewer services in the other scenarios by physicians randomized to capitation.

Managed care utilization review did not significantly decrease the percentage of physicians who said they would order tests or referrals (Table 5), although a trend in that direction was found. We found no association between physicians stating that they would order the indicated test or referral and their actual experience with utilization review.

We analyzed responses to the scenarios by the combination of incentives to detect any interaction between them (Table 6). For the scenarios in which the trends were statistically significant, only 84% of physicians randomized to the most restrictive managed care scenarios of full capitation and preauthorization by telephone said they would order the indicated x-ray for low back pain, compared to 94% of physicians randomized to fee-for-service scenarios. Only 50% of physicians randomized to the most restrictive scenario said they would refer the patient with dyspepsia for endoscopy compared to 61% of physicians randomized to the least restrictive scenarios.

Discussion

The medical community has shown concern that incentives in managed care will lead physicians to withhold medically indicated services, thereby compromising the quality of care and eroding patient trust.[5,6]

Our survey results suggest this concern is warranted, but should not be overstated. Compared to fee-for-service, capitation and utilization review caused a small but consistent decrease of 3% to 11% in physicians stating that they would order indicated tests and referrals. Because of our study's randomized design, we conclude that this difference, though modest, resulted from the financial incentives and utilization review depicted on our questionnaire, and not from factors such as demographics, practice characteristics, or experience with managed care; all factors were balanced in the randomized groups.

We also found, under various types of financial incentives and utilization review, that many physicians would not order indicated tests and referrals. Even among those physicians randomized to fee-for-service scenarios, 6% to 39% failed to say that they would order the indicated services.

These results provide modest support for the concerns that conflicts of interest may lead physicians to fail to act in their patients' best interests. The incentives used in our study led to only a small amount of underutilization, not gross lapses in the quality of care. Even this level of underutilization, however, matters for patients. For instance, a physician who fails to order an indicated exercise treadmill test for a woman with atypical angina could miss the diagnosis of significant coronary artery disease and fail to prevent a myocardial infarction or death.

Studies of actual practice suggest that our findings may underestimate the true level of underutilization. In a study that closely parallels our scenarios, salaried physicians in a staff-model HMO underutilized x-rays for patients with low back pain by 71%.[18] Adherence to preventive guidelines ranges from 50% for the National Cholesterol Education Program guidelines to 15% to 26% for mammography in an inner-city population.[19,20]

TABLE 4.—*Percent of Physicians Indicating They Would Order the Test or Referral According to Financial Incentive*

	Financial Incentive		
		Capitation with Bonus (n = 283)	
Scenario	Fee-for-Service (n = 141)	%	Full Capitation (n = 278)
X-ray for low back pain*	94	92	86
Stress test for atypical angina	89	84	85
Mental health referral for depression	81	78	78
Gastroenterology referral for dyspepsia†	61	60	51

*$P < .05$
†$P = .02$

TABLE 5.—*Percent of Physicians Indicating They Would Order the Test or Referral According to Utilization Review*

Scenario	Utilization Review: Insurance Form (n = 141)	Utilization Review: Committee of Colleagues (n = 283) %	Utilization Review: Preauthorization by Telephone (n = 278)
X-ray for low back pain*	94	90	88
Stress test for atypical angina	89	83	86
Mental health referral for depression	81	80	75
Gastroenterology referral for dyspepsia	61	56	55

*P = .06

Several reasons can explain why our findings may not reflect true rates of underutilization and the influence of incentives. Our subjects, ACP members of whom most are board certified in internal medicine, may be more knowledgeable about guidelines than a general sample of primary care physicians. Also, physicians are more likely to say that they would order the test or referral on a questionnaire than in real practice if they realize the "correct" answer.[21,22] A physician's decision regarding a given intervention may be affected by the source of the guideline, the invasiveness of the intervention, the need to involve another physician, and the implications of a missed diagnosis. Although our study was not designed to examine this issue directly, our results suggest that the quality of care might be improved by focusing as much, if not more, attention on encouraging physicians to adhere to reliable guidelines, rather than simply working to eliminate the effects of incentives in managed care. In fact, the level of underutilization we found for fee-for-service scenarios suggests that unless we improve adherence to reliable guidelines in all systems of care, the quality of care may suffer even in systems without any incentives to withhold services.

Our study has several limitations. Our results may not be generalizable to physicians who work in staff-model HMOs or government institutions, or to physicians who practice in areas of low, managed care penetration. We chose areas of the country with at least 30% penetration of managed care to insure that physicians would have at least some exposure and experience with the incentives depicted. Also, using different physicians as a pretest population, different guidelines or different scenarios may have affected our findings.[23]

Conclusions

A major ethical concern about incentives in managed care is that incentives may lead physicians to fail to act in the patient's best interest. Within the limitations of our study, we found some evidence that such incentives may have a small but real influence, leading physicians to withhold indicated services. This excess underutilization, though modest, may undermine patient trust in physicians. We also found that, regardless of incentives, a significant number of physicians failed to state that they would order indicated services. Poor adherence to guidelines also threatens the quality of care. Our findings underscore the need for better methods for detecting underutilization. Programs are also needed to ensure that physicians provide indicated services to their patients. These steps could mitigate ethical concerns regarding incentives, improve the quality of care, and bolster patient trust.

TABLE 6.—*Percent of Physicians Indicating They Would Order the Test or Referral According to Combination of Financial Incentive and Utilization Review*

Scenario	Version: Fee-for-Service/Insurance Form (n = 143)	Capitation with Bonus/Committee of Colleagues (n = 148)	Capitation with Bonus/Preauthorization by Telephone (n = 136) %	Full Capitation/Committee of Colleagues (n = 140)	Full Capitation/Preauthorization by Telephone (n = 143)
X-ray for low back pain*	94	92	93	88	84
Stress test for atypical angina	89	83	85	84	85
Mental health referral for depression	81	81	75	81	75
Gastroenterology referral for dyspepsia†	61	59	61	51	50

*P < .005
†P = .03

Acknowledgments

The authors thank Michelle McDermid, Lois Snyder, JD, and Warren Browner, MD, for their help with this project. We also thank all the physicians who participated.

This work was conducted while Dr Pantilat was a participant in the Robert Wood Johnson Clinical Scholars Program at UC San Francisco. This work was supported by the Robert Wood Johnson Foundation, the Walter and Elise Haas Fund, and Center Grant MH 42459 from the National Institute of Mental Health.

REFERENCES

1. Rapoport J, Gehlbach S, Lemeshow S, Teres D. Resource utilization among intensive care patients: managed care vs traditional insurance. Arch Intern Med 1992; 152:2207–2212

2. Murray JP, Greenfield S, Kaplan SH, Yano EM. Ambulatory testing for capitation and fee-for-service patients in the same practice setting: relationship to outcomes. Med Care 1992; 30:252–261

3. Hillman AL. Financial incentives for physicians in HMOs. Is there a conflict of interest? N Engl J Med 1987; 317:1743–1748

4. Hillman AL, Pauly MV, Kerstein JJ. How do financial incentives affect physicians' clinical decisions and the financial performance of health maintenance organizations? N Engl J Med 1989; 321:86–92

5. Angell M. The doctor as double agent. Kennedy Inst Ethics J 1993; 3:279–286

6. Rodwin MA. Conflicts in managed care. N Engl J Med 1995; 332:604–607

7. Miller RH, Luft HS. Does managed care lead to better or worse quality of care? Health Affairs 1997; 16:7–25

8. The InterStudy Competitive Edge. 1994; 4:68–92

9. Agency for Health Care Policy and Research. Acute low back problems in adults—assessment and treatment. Clin Pract Guide Quick Ref Guide Clin 1994; 14:1–25

10. Kotler TS, Diamond GA. Exercise thallium-201 scintigraphy in the diagnosis and prognosis of coronary artery disease. Ann Intern Med 1990; 113:684–702

11. Diamond GA, Forrester JS. Analysis of probability as an aid in the clinical diagnosis of coronary-artery disease. N Engl J Med 1979; 300:1350–1358

12. Pryor DB, Harrell FE, Jr., Lee KL, Califf RM, Rosati RA. Estimating the likelihood of significant coronary artery disease. Am J Med 1983; 75:771–780

13. American College of Physicians. Efficacy of exercise thallium-201 scintigraphy in the diagnosis and prognosis of coronary artery disease. Ann Intern Med 1990; 113:703–704

14. Agency for Health Care Policy and Research. Depression in primary care—guideline overview. J Natl Med Assoc 1993; 85:501–503

15. Kahn KL, Kosecoff J, Chassin MR, Solomon DH, Brook RH. The use and misuse of upper gastrointestinal endoscopy. Ann Intern Med 1988; 109:664–670

16. Health and Public Policy Committee, American College of Physicians. Endoscopy in the evaluation of dyspepsia. Ann Intern Med 1985; 102:266–269

17. NIH Consensus Development Panel on *Helicobacter pylori* in Peptic Ulcer Disease. *Helicobacter pylori* in peptic ulcer disease. NIH Consensus Conference. JAMA 1994; 272:65–69

18. Schroth WS, Schectman JM, Elinsky EG, Panagides JC. Utilization of medical services for the treatment of acute low back pain—conformance with clinical guidelines. J Gen Intern Med 1992; 7:486–491

19. Headrick LA, Speroff T, Pelecanos HI, Cebul RD. Efforts to improve compliance with the National Cholesterol Education Program guidelines. Results of a randomized controlled trial [see comments]. Arch Intern Med 1992;152:2490–2496

20. Burack RC, Gimotty PA, Stengle W, Warbasse L, Moncrease A: Patterns of use of mammography among inner-city Detroit women: contrasts between a health department, HMO, and private hospital. Med Care 1993; 31:322–334

21. Norman GR, Feightner JW. A comparison of behaviour on simulated patients and patient management problems. Med Educ 1981; 15:26–32

22. Holmes MM, Rovner DR, Rothert ML, Schmitt N, Given CW, Ialongo NS. Methods of analyzing physician practice patterns in hypertension. Med Care 1989; 27:59–68

23. Tunis SR, Hayward RS, Wilson MC, et al. Internists' attitudes about clinical practice guidelines [see comments]. Ann Intern Med 1994; 120:956–963